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(Article begins on next page)

EPHEDRA AND THE FDA

Food and Drug Law

Professor Hutt

Winter 2001

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Table of Contents

Introduction.....	1
What is Ephedra?.....	2
The History of Ephedra.....	4
New Uses of Ephedra.....	5

Manufacturing Situations of Concern.....	7
Combining Ephedra with Stimulants.....	8
Dosage Standards.....	10
The Problem Still Exists, but is it a Problem?.....	12
Addressing Quality Control.....	13
Impetus for Self-Regulation.....	13
Safety.....	16
The History of Dietary Supplement Regulation.....	25
The Flaws of the FDA’s Collection of Adverse Event Reports.....	30
OIG Recommendations for the FDA.....	33
Response from the Trade Associations.....	36
Threat to Prescription & Non-Prescription Pharmaceutical Weight Loss Industry.....	37
States Respond by Regulating Ephedra.....	37
To Regulate or Not to Regulate.....	38
FDA Action Plan.....	42
Conclusion.....	52

Introduction

Since 1993, ephedra has been the source of tremendous controversy.¹ The FDA has received more complaints on ephedra and products containing the synthetic form of ephedra (ephedrine) than any other dietary supplement available to consumers.² According to the Journal of Toxicology, ephedra-based supplements have resulted in cardiac effects, HTN, intracerebral hemorrhage, nephrolithiasis, mania, and death.³ More mild reactions include dizziness, headache, gastrointestinal stress, irregular heartbeat, and heart palpitations.⁴ The FDA has documented more than 40 deaths and more than hundreds of serious injuries, but the accuracy of these numbers have come under suspicion due to the reporting procedures used to collect the data.⁵

In January of 1999, the FDA listed ephedra at the top of its priority list for dietary supplements.⁶ This announcement falls on the heels of some dramatic deaths and strokes that have received extensive press coverage such as the death of Anne Marie Capati.⁷ She died after a physical trainer-nutritionist gave her a list of herbal supplements to take despite her efforts to inform him of her high blood pressure condition that required her to take medication.⁸

In February of 2001, a strong message was sent to the makers of ephedra products to the tune of \$13.3 million dollars intended to compensate Rosalie and Daniel Talbert for Rosalie's ensuing stroke after use of

¹Catherine Monahan, *Herbal Wonder or Worry?* Delicious Living! (January, 2001)

²Jennifer Sardina, *Misconceptions and Misleading Information Prevail—Less Regulation Does Not Mean Less Danger to Consumers: Dangerous Herbal Products*, Journal of Law & Health (1999-2000) (14 JLHEALTH 107).

³M. Wahl, C. Grant, & R. Jespersen, *Acute Psychosis from a Dietary Weight Control Supplement*, Journal of Toxicology: Clinical Toxicology, no. 5, vol. 38, pg. 522 (August 1, 2000).

⁴FDA Statement of Street Drugs Containing Botanical Ephedrine, April 10, 1996.

⁵Tara Parker-Pope, *Ephedra Use Grows, but is it Safe for Dieters?*, Asian Wall Street Journal, (4/9/01).

⁶House Report 106-1053. Activities of the House Committee on Government Reform, One Hundred Sixth Congress First and Second Sessions (1999-2000).

⁷Raul D. Reingold, *Herbal Supplements May Be Dangerous*, Trial, vol. 35, issue 12 (November 1, 1999).

⁸Capati v. Crunch Fitness Int'l, No. 113218 (N.Y. Sup. Ct. filed June 28, 1999). One product recommended and taken, Thermadrene, contained "20 mg of active ephedra, 150 mg guarana seed, 80 mg caffeine, 75 mg purple willow bark, 60 mg cayenne pepper, and 40 mg ginger root."

the E'ola product that was determined to contain ephedrine without indication of the ingredient on the packaging.⁹ This case does not apply directly to ephedra cases because the problem with this product was its synthetic ephedrine content, although, it signifies one of the difficulties with ephedra. Precisely because the product ingredient label stated ephedra and not ephedrine, it qualifies as a dietary supplement, which does not fall under the realm of the FDA's supervisory safety obligations.¹⁰ The FDA will be holding a public forum soon to further discuss the future of ephedra.¹¹

What is Ephedra?

Ephedra, also known as ma huang, contains the ephedrine alkaloid that stimulates the central nervous system.¹² Ephedrine alkaloids have an adrenaline like effect on the body—it “excites the nervous system, opens blood vessels, and stimulates the heart.”¹³ The ephedra sinica plant contains ephedrine alkaloids that are used in the herbal supplements once they have been cultivated from the dried stems of the plant.¹⁴ Some of the main alkaloids in ephedra are ephedrine and pseudoephedrine, which can be found in OTC drugs, but an important distinction is that the alkaloids in OTC drugs are produced synthetically.¹⁵ Synthetic ephedrine is more potent than the ephedrine alkaloids found in ephedra.¹⁶ Used mainly as a bronchial decongestant,

⁹E'ola Appealing \$13.3 Mil. Ephedrine Supplement Verdict, The Tan Sheet, vol. 9, issue 7 (February 12, 2001) (2001 WL 7868266).

¹⁰Dietary Supplement Health and Education Act of 1994, Pub.L. No. 103-417

¹¹65 FR 17510 (April 3, 2001).

¹²Tod L. Stewart, *Getting High with a Little Help from the FEDS: Federal Regulation of Herbal Stimulants*, Journal of Pharmacy & Law, (1997) (6 JPHARML 101).

¹³Hearings Before the House Government Reform Committee on Ma-Huang: Ancient and Modern Historical Perspectives. Daniel B. Mowrey, PH.D., 106th Congress (1999).

¹⁴*What is Ephedra?* The Ephedrine Education Council www.ephedrafacts.com

¹⁵Paul D. Rheingold, *The Prospects for PPA and Ephedra Litigation—and How it Differs From Prescription Drug Cases*, Mealey's Emerging Drugs & Devices, vol. 28 (January 18, 2001)

¹⁶See *supra* www.ephedrafacts.com

ephedrine is found in bronchodilators such as Primatene, while pseudoephedrine is commonly utilized in decongestants such as Sudafed.¹⁷ Physiologically, it acts to “expand breathing passages, constrict blood vessels, and increase arterial blood pressure.”¹⁸ It is the increase in arterial blood pressure that causes severe hypertension, stroke, or heart attack.¹⁹

It has gained notoriety for its use as an herbal supplement that is commonly found in weight loss products today.²⁰ Athletic individuals have also been using the product to reduce their fat to muscle weight ratio.²¹ High school and college students have taken advantage of it to study for long periods of time or late into the night.²² Many truck drivers purchase it at truck stops to help them stay awake on the road, and some people have even used ephedrine-based products for their diuretic effect.²³ A more dangerous application of ephedrine is its use to produce amphetamine/hallucinogenic drugs such as ecstasy.²⁴ Knock of street drugs such as herbal ecstasy promising “euphoric stimulation” have added to the confusion over the safety of ephedra.²⁵

¹⁷Jeffrey A. Crossman, *Mark McGwire Does It, So Why Can't I? High School Student Use of Dietary Supplements and the Failure of DSHEA*, 28 Capital University L.Rev. 617-657.

¹⁸*See supra* Note 2.

¹⁹Jody Aaron, *Death Over the Counter: Dangers of Ephedrine*, Trial, (December 1, 1997) (1997 WL 9957878).

²⁰*Ephedra on the Ropes*, Vitamin Research Products, Inc. Nutritional News (October, 1996) <http://www.vrp.com>

²¹*See supra* Note 17.

²²*See supra* Note 19.

²³*See supra* Note 2 and *see id.*

²⁴*See supra* Note 17.

²⁵*See id.*

The History of Ephedra

Ephedra has been used in a several different ways (e.g., respiratory infections, asthma, hay fever, chills, lack of perspiration, headache, and arthritis) in Traditional Chinese Medicine for more than 5000 years.²⁶ Ephedra plants were not used only in China, in fact, references to the plant date back to 1500B.C. in India.²⁷ It is documented that the Romans used ephedra as well.²⁸ Usage of ephedra in the United States is not new either (early American settlers used it for tea—known as Mormon tea).²⁹ Once an extensive study on the safety of ephedra was completed by Chen and Schmidt in 1930, doctors in the U.S. began to prescribe the synthetic form as a treatment for arthritis.³⁰ In the 1940s, doctors began to prescribe it more aggressively for asthma—asthma dosages of 150 mg per day were not uncommon.³¹ Like many other drugs used in Western medicine, the synthetic form was derived in a laboratory, which eliminates the dependency on a broker of the herbs.³² Even aspirin, now synthetically formulated, was derived from the bark of willow and poplar trees.³³ A laboratory setting makes it possible for companies to have ultimate control and benefit from financial savings.

²⁶Mark Blumenthal and Penny King, *Ma Huang: Ancient Herb, Modern Medicine, Regulatory Dilemma*, 34 Herbal Gram 22, 25 (Summer 1995).

²⁷*See supra* Note 13.

²⁸*See id.*

²⁹*See id.*

³⁰*See supra* Note 19 and *see id.*

³¹*See supra* Note 13.

³²*See id.*

³³*Heart Effects of Herbal Medicine*, Harvard Heart Letter, vol. 10, (March 1, 2000).

New Uses of Ephedra

While ephedrine has been widely used since the 1930's in the U.S., it has only recently been discovered to enhance thermogenesis, which is the process by which calories are burnt in order to generate heat.³⁴ This information led to the use of ephedrine in diet pills such as Phen-fen and ephedra in the herbal alternatives. Besides being marketed as a fat burner, ephedra is also marketed for its energy enhancing capabilities.³⁵ With increasing demands on our time, these supplements could seem like a "healthy" alternative to caffeine, despite the fact that caffeine is often found in the product as well. It has also become a popular and less expensive alternative for kids to get a legal "natural" high, but due to the deaths this product caused, many states have since banned products like herbal ecstasy or made any ephedrine-based products available only with a prescription.³⁶

A single product that claims to curb your appetite, increase your energy level, and cause your metabolism to speed up sounds like a wonder pill if there ever was one. These companies can capitalize on the fact that obesity is a growing problem in America. The sales volume reached \$278.9 million for diet pills, showing an increase of 89.6 percent over the sales volume for 1999.³⁷ More than 97 million adults qualify as obese or overweight in the United States.³⁸ The Centers for Disease Control has documented that the rate of obesity among people ages two to twenty has about doubled from what it was ten years ago.³⁹ This younger portion of the population has been increasingly using products with ephedrine to address this problem. The fact that most people equate natural with safe has proven to be fatal for some young teens that have overdosed on supplements with ephedrine alkaloids.

³⁴See *supra* Note 13.

³⁵Tod Stewart, *Getting High with a Little Help From the Feds: Federal Regulation of Herbal Stimulants*, Journal of Pharmacy and Law (1997).

³⁶See *supra* Note 17.

³⁷Diet Pills, Chain Drug Review, vol. 23, pg. 56, (January 1, 2001).

³⁸Elena Portyansky Beyzarov, *Battling the Bulge*, Drug Topics, vol. 144, pg. 51, (August 21, 2000).

³⁹*Marketing to Teens a Complex Issue*, Chain Drug Review, vol. 23, pg. 29 (April 9, 2001).

Generally, Americans are obsessed with losing weight and are inclined to take the quick-fix route whenever possible. This mentality coupled with a more is better attitude is responsible for the abuse of ephedra based products and subsequent deaths. Because natural products are equated with safety, many people believe there are no toxic repercussions for exceeding the recommended dose of a natural dietary supplement.⁴⁰ This misperception leads to the occurrence of overdoses.⁴¹ A lack of consumer awareness regarding the dangerous effects of this herb is at the root of this problem.

The dietary supplement industry needs to take responsibility for their role in this lack of knowledge transference. The Internet poses the largest hurdle to overcome in terms of false claims. Many products are even described as 100% FDA approved with no side effects.⁴² Given the circumstances in the case of Capati, it is reasonable to assume that she would not have knowingly risked her life by taking the supplements had she known of the dangers and problems associated with combination of prescription drugs and supplements she ingested.

Manufacturing Situations of Concern

Beyond the isolated question of the safety of ephedra, there are other considerations regarding safety, although these are not specific to the ephedra herb. Manufacturers stand to make enormous profits from fraudulent ingredients or claims.⁴³ There are additional issues not listed below, but I have chosen the ones that most apply to ephedra. Based on historical occurrences of these situations with herbs, these concerns

⁴⁰ See *supra* Note 3.

⁴¹ Joshua H. Beisler, *Dietary Supplements and Their Discontents: FDA Regulation and the Dietary Supplement Health and Education Act of 1994*, Rutgers L.J. 511-551 (Winter 2000).

⁴² 142 C.R. 5582 (comments by Sen. Alfonse D'Amato).

⁴³ John S. Williamson, and Christy M. Wyandt, *The Herbal Generation: Legal and Regulatory Considerations*, Drug Topics, pg. 101, (April 19, 1999).

are legitimate, and given the serious nature of the physical effects ephedra can have, these factors merit discussion.⁴⁴

1.

Dangerous Drug-herbal Interactions⁴⁵

2. Unreliability of Labels (amounts of herbs)⁴⁶

3. Fraudulent substitution—as in “chuifong tokuwan”, pills contained modern drugs in addition to lead and cadmium along with the herbs without indication on the label.⁴⁷ As mentioned earlier, a more recent and relevant instance of this concern occurred in the E’Ola and Talbert case in which ephedra was replaced with ephedrine.

Combining Ephedra with Stimulants

Another recent issue surrounding ephedra concerns combinations of ephedra with other stimulants like caffeine or kola nut and the irregularity of dosages of ephedra in products, that is in part a result of the different methods and environments used by suppliers.⁴⁸ According to the hearing testimony before the House Government Reform Committee on Ma Huang, Dr. Mowrey stated that adding stimulants to ephedra products is not done to increase the stimulant effect, but rather to “disinhibit brown adipose tissue thermogenesis thereby assuring a relatively small dose of ephedrine will be effective.”⁴⁹

This concept runs counter to the popular rationales given for the use of stimulants in addition to ephedra. Some combinations occur unknowingly, such as in the case of Capati and her prescription medicine. In other

⁴⁴W. Marvin Davis, *Dietary Supplements: Are they Safe and Reliable?*, Drug Topics, (4/16/01) (2001 WL 8119145).

⁴⁶*See id.*

⁴⁷*See id.*

⁴⁸*See supra* Note 41.

⁴⁹*See supra* Note 13.

instances, those who consume caffeine in foods or drinks should also be on alert of the effects additional stimulants can have. A study performed at the University of California at San Francisco commented on the addition of stimulants to ephedra products and warned that there is a dangerous potentiation effect.⁵⁰

Alternatively, according to Dr. Mowrey's testimony before the House Government Reform Committee, caffeine additions to ephedra within products is not dangerous and is in fact necessary to produce the desired effect when used to address obesity.⁵¹ Research demonstrates that a minimum of 20 mg of ephedrine alkaloids and 200 mg of caffeine three times per day is required in order to be effective—a level that far exceeds the recently proposed FDA regulation on the standardization of ephedrine alkaloid quantities.⁵² Although, even Dr. Mowrey acknowledges that many less scrupulous companies add other substances to the ephedra based products, and it is those substances that are often the culprits of the adverse effects.⁵³ He recommends some form of standardization within reason that is derived from scientific research.⁵⁴ A more aware and informed public is necessary in preventing tragic misuses of ephedra, but part of the current problem is the mixed information that exists. It is difficult to get a clear understanding of the safety of ephedra because news articles, the FDA, and trade associations barrage the American public with conflicting messages.

The need for more research on dietary supplements was recognized in 1992 when the United States Public Health Service established the Office of Alternative Medicine within the National Institutes of Health (NIH).⁵⁵ In 1995, the Office of Dietary Supplements (ODS) was created by NIH.⁵⁶ In 1998, the National Center for Complementary & Alternative Medicine (NCCAM) replaced the Office of Alternative Medicine.⁵⁷

⁵⁰See *supra* Note 15.

⁵¹See *supra* Note 13.

⁵²See *supra* Note 13.

⁵³See *id.*

⁵⁴See *id.*

⁵⁵See *supra* Note 43.

⁵⁶H.R. Rep. 106-645, *see also* www.dietary-supplements.info.nih.gov

⁵⁷See *supra* Note 43.

It was established, among other purposes, to evaluate herbal medicine.⁵⁸ The United States Pharmacopoeia (USP) has also stated that it is working on creating a monograph for ephedra.⁵⁹ These are steps in the right direction in the quest to ascertain the safety of dietary supplements such as ephedra and to demystify them.

Dosage Standards

The lack of standard dosage amounts of ephedrine alkaloids is a troubling issue to tackle because of the lack of the FDA authority to regulate the industry, but a recent proposed regulation in 1997 attempted to do just that—more than 8 mg per serving would qualify the supplement as adulterated or labeling that suggested more than a daily intake of 24 mg or more than 8 mg within 6 hours would fall under regulation according to the Federal Food, Drug, and Cosmetic Act (FDCA) section 402(a)(1) and (f)(1).⁶⁰ It also limited consumption to one week on the label of a product.⁶¹ This proposal would have returned broad authority to the FDA to regulate this herb because the rule did not attempt to define serious or adverse.⁶²

This proposal was not well received by the public. Restricting the dosage of the product alarms people and the industry because the action is perceived as a potentially slippery slope and because there is an enormous discrepancy regarding the necessity and effectiveness of such a drastic reduction.⁶³ About 60 percent of Americans take dietary supplements and they demand unfettered access to these products.⁶⁴ Part of the

⁵⁸ See *id.*

⁵⁹ See *supra* Note 43.

⁶⁰ Stephen H. McNamara, A. Wes Siegner, Jr., & Evan P. Phelps, *DSHEA Provisions Confine FDA's Authority to Issue Regulations that Concern Allegedly Adulterated Dietary Supplements*, Food & Drug L.J. 595-598 (1999) and see 62 Fed. Reg. 30,678 (June 4, 1997).

⁶¹ See *id.* 62 Fed. Reg. 30, 678 (June 4, 1997).

⁶² See *id.*

⁶³ See *supra* Note 5.

⁶⁴ *Adverse Event Reporting for Dietary Supplements: An Inadequate Safety Valve*, Office of the Inspector General, OEI-01-00-00180, (April 2001) at www.dhhs.gov/oig/oei

reason for this increasing portion of the population consuming dietary supplements is that they wish to take an active role in their health. Some have become discouraged with prescriptions that failed to help them, and therefore want to try a “healthier,” “safer,” more natural alternative.⁶⁵ Today, dietary supplements (including herbal therapies) are no longer shelved only at health food stores; they can be purchased at drug and grocery stores.⁶⁶ Drug companies and larger-scale manufacturers even eventually decided to cash in on the dietary supplement craze.⁶⁷ Due to the frenzy this proposal created by consumers and the dietary supplement industry (a nearly \$4 billion dollar industry that is growing at around 18 percent per year), and due to the concerns voiced by Congress, the General Accounting Office, and a directive from the Office of the Inspector General of the FDA’s parent agency, the Department of Health and Human Services, the FDA has backed down on this proposed regulation.⁶⁸ The directive instructed the FDA to perform a complete overhaul on its adverse reporting system. This requirement stemmed from a new report titled: “Adverse Event Reporting for Dietary Supplements: An Inadequate Safety Valve” that found the current system wholly inadequate.⁶⁹ The FDA’s Center for Food Safety and Applied Nutrition (CFSAN) has now redirected its efforts from regulating ephedra to developing a broader strategy to address the problems.⁷⁰

⁶⁵See *supra* Note 17.

⁶⁶*Time for a Second Opinion*, Harvard Health Letter, vol. 22, pg. 1 (November 1997).

⁶⁷Ray Aragon, Will O’Brien, Suzan Onel, *Dietary Supplement Makers, Sellers: Guard Against an Increase in Liability Suits*, Product Liability Law and Strategy, (April, 2000).

⁶⁸See *id.* See also Jane E. Brody, *Americans Gamble on Herbs as Medicine: With Few Regulations, No Guarantee of Quality*, N.Y. Times, at D1 (February 9, 1999).

⁶⁹See *id.* See also Note 64.

⁷⁰*GMPS, Ephedra Still on FDA A List*, Nutraceuticals International, (February 1, 2001).

The Problem Still Exists, but is it a “Problem?”

So, how much ephedrine is in that bottle? Even if consumers become more aware and attempt to read labels to avoid ingesting excessive amounts of ephedrine alkaloids, they may be making the effort in vein. A study that measured the ephedra content of 20 ephedra products resulted in a fairly shocking outcome—half of the products had an ephedra content that was 20 percent higher than stated on the label and one product exhibited an enormous range of 1.8-10 times the amount depending on the lot.⁷¹ The growing conditions, the plant’s age, storage, handling, and preparation all play a role in the levels of an herb within a product.⁷² But the significance of this information rests on the premise that ephedra isn’t safe in these higher levels. If it is indeed safe at higher levels for those individuals who do not have pre-existing medical conditions, and safe for those who refrain from combining stimulants, it is possible that these variances are harmless. Although, for those consumers who choose to vigilantly monitor their intake levels of ephedra because they wish to use the product in conjunction with other medications, this could be fatal.

Products containing extraordinarily high doses of ephedra should be avoided (a bodybuilder taking 20 mg of ephedra and 200 mg of caffeine along with a creatine supplement containing 6,000 mg of ma haung (ephedra) daily suffered a stroke in Dec. 1999).⁷³ The creatine supplement is extremely popular with bodybuilders and it is important that the sports community receive information on the safety of such high levels of ma huang.

⁷¹See *supra* Note 72.

⁷²See *id.*

⁷³*Body Builder’s Sudden Stroke May Be Linked to Ma Huang*, Mealey’s Emerging Drugs and Devices (January 7, 2000), (5 No. 1 MLREDD 24).

Addressing Quality Control

A partial solution that has been suggested is for manufacturers to adopt the Good Manufacturing Practice (GMP) standards required of over-the-counter pharmaceuticals, but this proposal seems to fall short of reality and is not sufficient to address the issue at hand.⁷⁴ The most fraudulent companies producing ephedra products are not likely to adopt these practices unless required to do so, and even then, compliance of less than 100 percent would still leave the consumer vulnerable to choosing a product that does not use the same standards. Some companies are currently abiding by the GMP standard.⁷⁵ Of course, the label could advertise the implementation of Good Manufacturing Practices, but this will not provide much information to the average consumer.

Impetus for Self-Regulation

One incentive to adopt standards is the growing litigation over ephedra. When using different search engines with the search term ephedra, a link to local legal help for ephedra adverse events is displayed first. The larger manufacturers and drug companies with deep pockets that now produce dietary supplements provide a stronger incentive for lawyers to accept contingency cases of injured parties. Presently, class actions with this herb are increasing. Recently, a class action suit was filed in California against the dietary supplement giant Metabolife and other smaller companies.⁷⁶ The class seeks compensatory damages for neglecting to

⁷⁴See *supra* Note 44.

⁷⁵See *supra* Note 2.

⁷⁶See *supra* Note 15.

warn consumers about the possible effects of ephedra.⁷⁷ Many settlements have already occurred regarding ephedra, and lawsuits have increased with the growing coverage of this herb.⁷⁸ Fortunately, and possibly as a consequence of the increase in lawsuits, some companies have begun to work with the FDA to pull their own products when notified of serious side effects.⁷⁹ Other companies have added recommendations to their product's label instructing consumers to consult a physician before using the product.⁸⁰ (Although, until physicians get up-to-speed with the dietary supplements, this may not be enough of an action to stave off an adverse event.) The abundance and likelihood of ephedra lawsuits should encourage the industry and individual companies to self-regulate in a more stringent and cautious manner.

Lawsuits not only involve failure to warn claims, but also include claims regarding impurity both for substituted ingredients and differing amounts of an ingredient than purported on the label.⁸¹ Suits against trainers, nutritionists, health food stores, and diet counselors will also encourage that proper warnings are given.⁸² A survey given to chain and independent pharmacists indicated that most pharmacists who would recommend a standardized herbal formula over a non-standardized one did not understand the difference between them and did not have a good grasp of common uses of medicinal herbs.⁸³

This startling information shows that a pharmacist could make a recommendation that a consumer would trust despite the fact that the pharmacist has little knowledge about herbal remedies. People in trusted positions must get up to speed with the latest information on herbal remedies. Even if the evidence is inconclusive at the moment, the consumer should be made aware of the potential for interactions with other herbs or medications and the fact that more is not better with herbs and can lead to serious injury. Lastly,

⁷⁷See *id.*

⁷⁸See *supra* Note 9.

⁷⁹Rebecca Porter, *Supplements Supply Dietary Danger, as FDA Looks on*, Trial, (October 1, 1998).

⁸⁰See *supra* Note 19.

⁸¹See *supra* Note 15.

⁸²See *id.*

⁸³See *supra* Note 43.

doctors would not be immune from suit if they have failed to ask their patients what herbs or supplements they are taking before prescribing medicine that could lead to an adverse interaction.⁸⁴ A survey conducted by the Beth Israel Deaconess Medical Center in Boston found that over 70 percent of patients did not inform their doctors of the alternative therapies they used.⁸⁵ This study furthers the idea that doctors should have an affirmative duty to ask their patients what dietary supplements they take. With that responsibility comes another—obviously the doctors must have some knowledge of dietary supplements or at least be willing to look up the information. Information on dietary supplements is vast and confusing, which means that current doctors will have to school themselves in this field or go back to school. Medical schools such as Harvard Medical School are beginning to address this issue by adding courses on alternative medicine to their medical school curriculum.⁸⁶

Safety

Manufacturers are quick to point out the fact that an herb such as ephedra has been used for centuries in Chinese medicine. This type of advertising only fuels the perception that natural and herbal equals safe. There is an implied test of time guarantee, but last tallied, there is a minimum of six wrongful death suits against the manufacturer of Nature's Nutrition Formula One.⁸⁷ The FDA has received more complaints about ephedra than any other dietary supplement.⁸⁸ In response to the complaints they received, the FDA released a warning regarding this specific product and also gave out a hotline number for consumers to

⁸⁴See *supra* Note 15.

⁸⁵See *supra* Note 66.

⁸⁶See *id.*

⁸⁷See *supra* Note 35.

⁸⁸See *supra* Note 2.

call.⁸⁹ This announcement was followed up by another one made on April 10, 1996 to healthcare professionals requesting them to report adverse events to the FDA via Medwatch or the hotline.⁹⁰

The question on the mind of everyone, including the FDA, is: Is ephedra safe for consumption? The jury is still out on this question. One factor that increases the danger of ephedrine toxicity is its relatively short half-life of six hours to ten hours—the levels of toxicity can be cumulative when it is ingested on a regular basis, and the effect is heightened by other the use of other stimulants like caffeine.⁹¹ Yet, the FDA has itself approved the use of ephedrine in OTC drugs in dosages of 25 mg per use and up to 150 mg per day, and declared that ephedrine is “generally recognized as safe and effective.”⁹² This is quite telling because synthetic ephedrine is stronger than ephedra. Pseudoephedrine was approved for single doses of 60 mg and 240 mg per day.⁹³

The language contained within the Dietary Supplement Health and Education Act (DSHEA) also leads one to believe in the safety of virtually all dietary supplements (“dietary supplements are safe within a broad range of intake, and safety problems with the supplements are relatively rare”).⁹⁴ Adversaries of the FDA’s desire to regulate ephedra would provide statistics about the relative safety of ephedra versus prescription drugs, and remind the reader that the causal link of most of the adverse events with ephedra has not been established. Moreover, millions of doses of ephedra are taken each year by Americans without serious repercussions.⁹⁵ This illustrates that the herb can be safe if used as directed. This assertion is supported by Dr. Mowrey’s review of the FDA’s AER list—he found that none of the serious adverse events had occurred when the product when the product was ingested properly.⁹⁶

⁸⁹See *supra* Note 35.

⁹⁰See *id.*

⁹¹See *id.*

⁹²See *supra* www.ephedrafacts.com

⁹³See *id.* www.ephedrafacts.com

⁹⁴Dietary Supplement Health and Education Act of 1994, Pub. L. No. 103-417, 108 Stat. 4325 (1994).

⁹⁵See *supra* Note 13.

⁹⁶See *id.*

However, Dr. Mowrey also downplays the significance or correlation of those who have died and their consumption of ephedra. For example, he stated, Hundreds of people die in doctors offices while on treadmills. Is it a surprise, then, that out of the millions of Americans using ma haung, one of them happens to experience exercise-related injuries?⁹⁷ There is logic in this statement, but the issue should also not be summarily dismissed so quickly. It has become apparent that certain groups are at risk such as the 17-year-old high school football player who reportedly never exceeded the recommended dosage and died of a heart attack caused by ephedrine toxicity.⁹⁸

Regardless of the problems with the reporting procedures used in the AEMS, one thing is clear: many of those complaining of adverse events have misused or abused ephedra.⁹⁹ During a testimony by Theodore M. Farber, PhD, he explained that most people reporting negative effects “had hypertension, were diabetic, had a family history of heart disease or were taking other medications—one person was taking 85 pills a day.”¹⁰⁰ It is certain that people with previous conditions including but not limited to heart conditions, elevated blood pressure, asthma (and are on medication), diabetes, or glaucoma should not take this product.¹⁰¹ Or, at a minimum, a doctor should be consulted.¹⁰²

Unfortunately, sensitivities are impossible to predict for even healthy individuals.¹⁰³ According to Anthony Almada, president and chief science officer of Imaginutrition, a natural products consulting group, 20 percent of 100 people in a recent study on ephedra quit because they simply “couldn’t handle ephedra.”¹⁰⁴ For this reason, consulting a doctor even if you currently have no known health concerns would be wise. An herb expert, Varro Tyler, PhD, strongly recommends people be supervised by a physician if they wish

⁹⁷See *supra* Note 13.

⁹⁸See *supra* Note 19.

⁹⁹See *supra* Note 1.

¹⁰⁰See *id.*

¹⁰¹See *supra* Note 1.

¹⁰²See *id.*

¹⁰³See *id.*

¹⁰⁴See *id.*

to use ephedra for longer than seven days.¹⁰⁵ A doctor can aid in the prevention of a serious health problem by monitoring the vital signs of the patient.¹⁰⁶ For those who cannot afford this monitoring, serious consideration should be given to the reasons for taking the herb and other stimulants should be avoided completely. This herb is meant to provide initial assistance and not long-term aid for dieters.¹⁰⁷ Some experts believe that the long-term use of stimulants is not advised because they keep the body in a constant 'fight or flight' mode, rapidly depleting its energy reserves and potentially leading to a variety of disorders.¹⁰⁸ More mild side effects like insomnia or headaches can also occur, which should provide alternative incentives to avoid prolonged usage.¹⁰⁹

Other healthcare professionals would argue vehemently against the assertion that the product cannot or should not be used for a long-term diet aid. A six-month clinical trial study conducted at Columbia University found that ephedra did aid participants in losing weight and increased their energy level.¹¹⁰ The patients receiving ephedra lost twice the amount of weight the patients receiving a placebo lost.¹¹¹ Nevertheless, long-range studies need to be performed. Regardless of which camp you decide to join, it does seem evident that until more extensive research is done, and until more thorough data can be compiled on the adverse effects of the herb, a physician should be consulted for long-term use to ensure that the regimen is appropriate.

In fact, the Council for Responsible Nutrition sought to provide clarity on the topic by hiring a scientific consulting firm, Cantox Health Sciences, to determine the safe dosage and overall safety of ephedra from 19 ephedra studies.¹¹² According to council President, John Cordaro, The totality of information showed a consistency that was compelling. They concluded that 90 mg doses per day were in fact safe for most

¹⁰⁵ See *id.*

¹⁰⁶ See *id.*

¹⁰⁷ See *id.*

¹⁰⁸ See *supra* Note 2.

¹⁰⁹ See *supra* Note 1.

¹¹⁰ See *supra* Note 5.

¹¹¹ See *id.*

¹¹² *Diet and Nutrition: Industry Tells FDA Ephedra is Safe*, Medical Letter on the CDA & FDA, (January 14, 2001).

people.¹¹³ Those thought to be at risk and therefore should not take the ephedra are: anyone under 18, people with heart disease, diabetes, glaucoma, high blood pressure, thyroid disease, kidney impairment, or enlarged prostates, or pregnant or nursing women.¹¹⁴ The report recommends that the label reflect these at risk groups in the form of a warning.¹¹⁵

The results of this report were similar to another industry-sponsored study performed by Harvard and Columbia.¹¹⁶ After glancing at the list of those in the at risk group, it is difficult to not worry about the marketing and use of ephedra for weight loss in obese individuals. Many severely overweight individuals would be the ones who would fall into the at risk category because they often have high blood pressure or diabetes, which heightens the necessity to have these warnings placed on product labels. These reports help to illuminate the safety question, and address the likelihood of adverse events in certain groups. Additional studies are vital considering that the adverse effects are thought to be at least tenfold the number the FDA has recorded.¹¹⁷

German Commission E Monographs

The German Commission E was founded in 1978.¹¹⁸ On January 17, 1991, they published a monograph on ephedra.¹¹⁹ One reason for the creation of this commission is that herbal medicines account for 30 percent

¹¹³ See *id.*

¹¹⁴ See *id.*

¹¹⁵ See *id.*

¹¹⁶ Guy Gugliotta, *Report Disputes Ephedra Dosage; Supplement Called Safe at Levels Higher Than FDA Suggests*, The Washington Post, A Section (December 21, 2000).

¹¹⁷ *New Doubts about Ephedra*, Chain Drug Review, vol. 22, (December 11, 2000).

¹¹⁸ Siegrid Klein and Chance Riggins, *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines*, (M. Blumenthal ed., 1998) (American Botanical Council).

¹¹⁹ See *id.*

of the drugs sold in pharmacies there.¹²⁰ Herbs require the E marking to be on the market.¹²¹ A critical difference is that over half of the herbs are actually prescribed by physicians.¹²² A 1997 poll on the use of herbal medicines showed that two-thirds of those polled took herbal medicines and of these two-thirds, 72 percent had a minimum of some college education.¹²³ The phytopharmaceutical companies sponsored the testing of ephedra's toxicity, which is possibly the reason that the toxic effects are less comprehensive in this report than in *The Laurence Review of Natural Products*.¹²⁴

The German Commission E lists the uses, contraindications, side effects, interactions with other drugs, recommended dosages, mode and duration of administration for ephedra.¹²⁵ Interestingly, weight management and increased energy are not included in uses.¹²⁶ Furthermore, the potential for fatal effects is absent.¹²⁷ Strangely, under higher dosages, development of dependency is listed.¹²⁸ Interactions with other drugs include: cardiac glycosides or halothane, which results in the disturbance of the heart rhythm; guanethidine and MAO-inhibitors, which lead to an enhancement of the sympathomimetic action of ephedrine; and finally, decal alkaloid derivatives or oxytocin, which can cause the development of hypertension.¹²⁹ Adult dosage is set at 15-30 mg per dose with a daily maximum of 300 mg.¹³⁰ Children are limited to .5 mg of total ephedrine alkaloid per kg of body weight with a daily maximum of 2 mg of total ephedrine alkaloid per kg of body weight.¹³¹ The duration of administration states that this herb is for short-term use only because

¹²⁰ Alan T. Marty, MD, Review of *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicine*, JAMA, vol. 281, no. 19, (May 19, 1999).

¹²¹ Jonathan Treasure, MNIMH, *Making Sense of the German Commission E Monographs*, (2000) at www.teleport.com/~jonno/undertanding.html

¹²² See *supra* Note 120.

¹²³ See *id.*

¹²⁴ See *id.*

¹²⁵ See *supra* Note 118.

¹²⁶ See *id.*

¹²⁷ See *id.*

¹²⁸ See *id.*

¹²⁹ See *id.*

¹³⁰ See *id.*

¹³¹ See *id.*

of tachyphylaxis and danger of addiction.¹³²

In a note, the International Olympic Committee and the German Sports Association have qualified ephedra as addictive.¹³³ However, Edgar H. Adams, M.S., Sc.D., former Director of the Division of Epidemiology and Statistical Analysis at the U.S. National Institute on Drug Abuse, provides a more current evaluation of ephedra.¹³⁴ He found no reason to believe that this herb possesses addictive qualities.¹³⁵ Although, he did not categorically rule out the possibility, he did state that the likelihood was low and not certain enough to merit regulatory control.¹³⁶

It was the American Botanical Council (ABC) that made the highly anticipated English translation available.¹³⁷ Well-respected professionals such as Professor Varro Tyler and Dr. Andrew Weil touted this publication as offering the most accurate information in the world—a reference guide that doctors can trust.¹³⁸ But, the monographs in this guide are incredibly brief with very little detail.¹³⁹ In fact, references to literature are conspicuously absent, which diminishes their value as a complete resource because the rationale for the decisions made is not ascertainable.¹⁴⁰ Regarding this flaw, Professor Heinz Schilcher, the Vice President of the Commission, divulged that speculation rather than scientific data is sometimes used to reach some conclusions that appear in the monographs.¹⁴¹ This is disconcerting when the monographs have received such acclaim and praise for being the most scientific and trustworthy source of information on herbs.¹⁴² Some physicians and pharmacists have begun to cite Commission E monographs as immutable truths, which is cause for alarm when it is known that the monographs do contain some mistakes, omissions,

¹³²See *id.*

¹³³See *id.*

¹³⁴Adams, E.H. 1999. Statement to U.S. FDA. FDA Docket No. 98N-0148, cmt. 28, tab A. Feb 10.

¹³⁵See *id.*

¹³⁶See *id.*

¹³⁷See *supra* Note 121.

¹³⁸See *id.*

¹³⁹See *supra* Note 120.

¹⁴⁰See *id.*

¹⁴¹See *supra* Note 121.

¹⁴²See *id.*

and speculations.¹⁴³

The recommended dosages may also present a problem when applied in the United States.¹⁴⁴ For example, the ephedra dosages are listed for the preparation of the dried herb for German aqueous infusions or decoctions, but in the United States the hydroethanolic extracts are usually taken from fresh and not dried herbs, and the conversion needed can be complex.¹⁴⁵ Similarly, the use of standardized herbal material, occurring more frequently, makes the task of correlating the standardized herbal material to the infusion based dose data in the monographs more difficult.¹⁴⁶ Another topic of concern relating to the monographs and the ephedra monograph specifically, is the lack of available studies at the time.¹⁴⁷ This could drastically impact the recommendations the Commission made.¹⁴⁸

In spite of the flaws contained in the German Commission E Monographs, the American Botanical Council believes that the Commission E system can provide an excellent model for regulatory reform, in the United States and possibly other countries, by providing a rational process for reviewing herbs and phytomedicines for their safety and efficacy.¹⁴⁹ Naturally, ABC has an incentive in pushing the authoritative nature of this work.¹⁵⁰ It can add to the credibility of the use of herbs for medicinal purposes, which aids in solidifying their role as intermediary between the industry, physicians, and the FDA.¹⁵¹ It is valuable to avoid over-inflating the worth of this publication because it should not be the only source consulted, nor should the herbal industry be lulled into thinking that further substantial efforts in creating more useful and detailed monographs is not a priority. Nevertheless, the German Commission E monographs are a starting point that

¹⁴³ *See id.*

¹⁴⁴ *See id.*

¹⁴⁵ *See id.*

¹⁴⁶ *See id.*

¹⁴⁷ *See id.*

¹⁴⁸ *See id.*

¹⁴⁹ *See id.*

¹⁵⁰ *See id.*

¹⁵¹ *See id.*

we can learn from and improve upon.

The History of Dietary Supplement Regulation

Some senators remarked that the lobbying efforts for the Dietary Supplement Health and Education Act (DSHEA) paralleled the Vietnam War.¹⁵² “Many members of the House of Representatives and Senate stated that they were receiving more mail, more phone calls, and generally more constituent pressure on this subject than on anything else—including health care reform, abortion, or the deficit.”¹⁵³ At that time, there was a commonly held belief that the FDA was regulating the dietary supplement with an iron fist. Consumers wanted access to herbs and supplements without being forced to wait for FDA approval. The combination of the mass campaign and the underlying argument that health of Americans should be a priority and that the “importance of nutrition and the benefits of dietary supplements to health promotion and disease prevention have been documented increasingly in scientific studies.”¹⁵⁴

As a result, DSHEA was passed and was signed into law by the President on October 25, 1994, but took effect in 1996. This was a watershed event for the dietary supplement industry and consumers of their products. The amendment was enacted to appease the American public and the dietary industry and to ensure the availability of products that are accurately labeled and safe.¹⁵⁵ The language of the statute even indicated that the FDA had taken on too much of a big brother role in regulating dietary supplements. This is evidenced in the warning sentence: “the Federal Government should not take any actions to impose unreasonable

¹⁵²See *supra* Note 41.

¹⁵³See *id.*

¹⁵⁴Stephen H. McNamara, *FDA Regulation of Ingredients in Dietary Supplements After Passage of the Dietary Supplement Health and Education Act of 1994: An Update*, 51 FOOD & DRUG L.J. 313 (1996).

¹⁵⁵Pub. L. No. 103-417, § 2, 108 Stat. 4325 (codified at 21 U.S.C. § 321 NOTE (2)).

regulatory barriers limiting or slowing the flow of safe products and accurate information to consumers.” President Clinton’s statement to the public upon signing the legislation reflected this sentiment.¹⁵⁶ He declared that the FDA had complicated the decisions consumers needed to make and “paradoxically limited the information to make healthful choices.”¹⁵⁷

This Act basically amended the portion of the Federal Food, Drug, and Cosmetic Act (FDCA) dealing with dietary supplements and their dietary ingredients.¹⁵⁸ Herbs fell under the rubric of dietary supplements because DSHEA defined a dietary supplement as product meant to supplement the diet that contained herbs or other botanical substances, amino acids, vitamins or minerals, or a combination of these.¹⁵⁹ Prior to DSHEA, dietary supplement companies were required to pass the “new drug approval” (NDA) process, which included submitting pre-market evaluations on the safety and efficacy of the new product, and the FDA was able to determine whether the labels were misleading or easily understandable.¹⁶⁰ Most herbs never made it through the NDA process, which was partially due to the fact that companies had no incentive to spend substantial amounts of capital on the research for the required safety and efficacy substantiation because herbs cannot be patented.¹⁶¹ Under DSHEA, this pre-market approval information was no longer necessary and the barrier to market entry was removed.¹⁶² A safe harbor was created for companies to manufacture herbal remedies that would be classified as dietary supplements.¹⁶³ This classification blocks the FDA from regulating the herbal products as food additives, which would have given them more regulatory authority.¹⁶⁴

¹⁵⁶1995 U.S.C.C.A.N. 3523-1, Statement by the President of the United States (October 31, 1994)

¹⁵⁷*See id.*

¹⁵⁸Pub. L. No. 103-417, § 4, 108 Stat. At 4328 (codified at 21 U.S.C. § 342 (f) (1)(B)).

¹⁵⁹*See supra* Note 7.

¹⁶⁰Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 321 (1993).

¹⁶¹Cary Elizabeth Zuk, Herbal Remedies are Not Dietary Supplements: A Proposal for Regulatory Reform, *Hastings Women’s L.J.* 29-57, (Winter, 2000).

¹⁶²*See supra* Note 158.

¹⁶³*See supra* Note 161.

¹⁶⁴*See id.*

DSHEA dramatically affected labeling of dietary supplement products. It requires that products be clearly labeled as dietary supplements, and have the name and quantity of each ingredient on the label.¹⁶⁵ If it is a combination product, the label must list the total amount of non-inert ingredients.¹⁶⁶ An herbal product must state the specific part of the plant from which it was derived.¹⁶⁷ Nutrition information in order of most significant amounts for which the FDA has established guidelines is also required. Section six of DSHEA has had the greatest impact on the dietary supplement industry's ability to market their products. It enabled manufacturers of herbal products to make structure-function claims on the packing of their products.¹⁶⁸ Section six defines when a statement is acceptable: "The statement claims a benefit related to a classical nutrient deficiency disease and discloses the prevalence of such disease in the United States, describes the role of a nutrient or dietary ingredient intended to affect the structure or function in humans, characterizes the documented mechanism by which a nutrient or dietary ingredient acts to maintain such structure or function, or describes general well-being from consumption of a nutrient or dietary ingredients."¹⁶⁹

For example, a company producing Valerian cannot state that the product cures insomnia, but it can refer to the products' ability to "promote restful sleep" provided that it also includes a disclaimer that "this statement has not been evaluated by the Food and Drug Administration. This product is not meant to diagnose, treat, cure, or prevent any disease."¹⁷⁰ This tacked on statement does not sufficiently indicate that the consumer should be cautious. As evidenced by the example above, the structure/function claims can be misleading and certainly the average or even above average consumer is not knowledgeable about the blurred demarcation and will not think critically about the fact that the claim does not affirmatively proclaim to cure insomnia. Consequently, the structure/function claim standard, third-party marketing

¹⁶⁵See *supra* Note 43.

¹⁶⁶See *id.*

¹⁶⁷See *id.*

¹⁶⁸See *supra* Note 158.

¹⁶⁹See *id.*

¹⁷⁰See *supra* Note 161.

materials, and statements such as this product has recognized healing properties has fueled the natural equals safe perception and enhanced consumers unquestioning belief in the efficacy of the products.¹⁷¹

In February of 1996, the appointed Commission on Dietary Supplement Labels (a commission provided for in DSHEA) had their first meeting.¹⁷² In a 1997 report, they suggested that dietary supplement manufacturers should bear the burden of self-regulation in regards to the warning labels and safety of their products.¹⁷³ The commission has advised against misleading consumers with product labels, and has suggested that unverified claims should be blatantly qualified.¹⁷⁴ They also strongly advised the industry to provide unbiased material on the products that addresses evidence of nutritional support, product safety for its intended use, and safety of dosages.¹⁷⁵ While these are all useful suggestions, it is the implementation and incentive for implementation that has been lacking.

DSHEA also affected the FDA's ability to establish a case that a product was in fact a new drug by banning the use of advertisement claims of products in publications associated with the sale of supplements in order to aid in demonstrating improper labeling.¹⁷⁶ These publications could not be attached to the product directly, push a specific brand or manufacturer, be false or misleading, and the publication needed to offer a balanced presentation of the available scientific information.¹⁷⁷ And, once again, the FDA bears the burden of substantiating any infraction of this provision.¹⁷⁸ The consequence of this section of DSHEA is an ability on the part of manufacturers of dietary supplements to make claims and representations that could not otherwise be made. These publications have aided in the perception that dietary supplements are safe and certain herbs or supplements can be a panacea.

¹⁷¹ See *supra* Note 43.

¹⁷² See *id.*

¹⁷³ See *id.*

¹⁷⁴ See *id.*

¹⁷⁵ See *id.*

¹⁷⁶ See *supra* Note 161.

¹⁷⁷ See *id.*

¹⁷⁸ See *id.*

DSHEA does provide two methods of regulation as long as a dietary supplement or an ingredient qualifies as adulterated.¹⁷⁹ In order to fall under this provision, the supplement or ingredient must “present a significant or unreasonable risk of illness or injury under conditions of use recommended or suggested in the labeling, or if no condition of use are suggested or recommended in the labeling, under ordinary conditions of use.”¹⁸⁰ Essentially, the supplement or ingredient must place the public in a position of significant risk for imminent harm.¹⁸¹ The United States bears the burden of proof of establishing the above conditions.¹⁸² More importantly, if the FDA were to attempt to enforce a new regulation regarding a dietary supplement, the FDA would still be forced to demonstrate the dietary supplement was adulterated.¹⁸³ Basically, dietary supplements are regulated as foods.¹⁸⁴ Companies manufacturing herbal products do not have to conform to a standard dosage or strength.¹⁸⁵ As a result, the FDA has been placed in position of regulating by news release.¹⁸⁶

The Flaws of the FDA’s Collection of Adverse Event Reports

Because the FDA cannot regulate dietary supplements as drugs, it is relegated to a watch and wait position. It needs to provide conclusive evidence that a product is unsafe for consumption before it can ban or remove a dietary supplement from the market.¹⁸⁷ It is for this reason that the effectiveness of collecting information

¹⁷⁹ See *supra* Note 158.

¹⁸⁰ See *id.* at 4328 (codified at 21 U.S.C. 342(f)(1)(A)).

¹⁸¹ See *id.* at 4328 (codified at 21 U.S.C. 342(f)(1)(A)).

¹⁸² See *id.* at 21 U.S.C. 342(f)(1).

¹⁸³ See *id.*

¹⁸⁴ See Dietary Supplement Health and Education Act § 3, 4.

¹⁸⁵ See *supra* Note 160.

¹⁸⁶ Statement of Ilene Ringel Heller, Staff Attorney, The Center for Science in the Public Interest, to the U.S. Dept. of Health and Human Servs. (June 8, 1999), at www.cspinet.org/reports/diet_supplement.html

¹⁸⁷ See *supra* Note 17.

on the safety of dietary supplements is imperative. The FDA's Adverse Event Monitoring System (AEMS) was designed to aid them in assessing hazards connected to specific dietary supplements and alerting the public of any safety issues with these products.¹⁸⁸ The AEMS was designed to "1.detect adverse events, 2.generate signals of possible public health concerns, 3.assess those signals, and 4.take appropriate safety actions based on its assessment."¹⁸⁹ One large fault of the reporting system is that the adverse event may or may not be associated with the injury because confirmation is not guaranteed.¹⁹⁰ Moreover, the reporting of an event is not compulsory, so it is unclear how many other adverse events are occurring from ephedra.¹⁹¹ One company has admitted to receiving 3,500 consumer complaints that were never reported to the FDA.¹⁹² Based on the FDA's conclusion of the risk posed to the public (experts and/or studies are used to determine this), the FDA will issue warnings, alerts, request a product recall, or seize a product.¹⁹³ Because the results of AEMS for ephedra led the FDA to propose a new regulation to limit the amount of ephedrine alkaloids within a product, the flaws of the AEMS are crucial to this validity or necessity of this proposal. Due to strong criticism, the FDA has since withdrawn this controversial proposal.¹⁹⁴

A recent study commissioned by the FDA found that the FDA receives reports on under one percent of the actual adverse events that occur, which is thought to be a result of the consumers' belief that natural equals safe, the fact that these products are used without a doctor's supervision, and because consumers are not aware they should contact the FDA.¹⁹⁵ Many consumers contact the company instead, and the company certainly has no incentive to report adverse incidents to the FDA—quite to the contrary, doing so could negatively impact their financial earnings. Unless the company is aware of a deadly result or serious

¹⁸⁸See *supra* Note 186.

¹⁸⁹See *id.*

¹⁹⁰See *id.*

¹⁹¹See *id.*

¹⁹²*FDA to Consumers: Good Luck with the Dietary Supplements*, vol. 23, pg.1 (January 1, 2001).

¹⁹³See *supra* Note 186.

¹⁹⁴Under Examination, Medical Malpractice L. & Strategy, (April 12, 2000) (17 No. 6 MEDMALLST 12).

¹⁹⁵See *supra* Note 186.

deviation in their formula causing serious bodily injury, they are not likely to contact the FDA (if such a serious outcome were likely, they would be motivated to make every possible attempt to correct the problem in order to avoid class action and individual suits that could leave them bankrupt).

Missing data is another obstacle in the way of validly interpreting the safety of particular dietary supplements. The FDA lacks the medical records tied to the events reported, which is in part due to the fact that only 20 percent of adverse event reports originate from a doctor.¹⁹⁶ It also has inadequate information on the products consumers or doctors cite as the cause of their symptoms.¹⁹⁷ Surprisingly, the FDA is unaware of the ingredients contained in 32 percent of the reported problematic products, does not have the labels of 77 percent of the “problem” products, and had not obtained samples for 69 percent of the reported products.¹⁹⁸ Other substantial flaws include the inability to ascertain the manufacturer for 32 percent of the products, and the inability to follow-up with callers flagged for follow-up due to inadequate contact information.¹⁹⁹

All the aforementioned defects leave the FDA incapable of analyzing the data in a meaningful way.²⁰⁰ This relates directly to their ability to establish a connection between the reports and the safety of the products. At this point, the FDA does not have enough clinical information on the dietary supplements on the market because it is not required of the manufacturers (there is an exception that affects a small number of manufactures—certain new dietary ingredients must submit “relevant” safety information 75 days prior to market introduction), but more clinical information is becoming available on almost a daily basis.²⁰¹

Another essential missing data point is the total number of consumers who take a specific product.²⁰²

¹⁹⁶ *See id.*

¹⁹⁷ *See id.*

¹⁹⁸ *See id.*

¹⁹⁹ *See id.*

²⁰⁰ *See id.*

²⁰¹ *See id.*

²⁰² *See id.*

The lack of comprehensive data necessarily leads to inaction on the part of the FDA. Any action taken would be attacked severely, which is evidenced by the proposed regulation to limit the allowed dosage of ephedra. Instead, the FDA has relied on its website to inform the public, but this site is inadequate because it is not updated regularly, and according to the report by the Office of the Inspector General (OIG), the site “contains misleading information.”²⁰³ Because consumers need to be informed, changes must be made to the adverse event monitoring system. The present system has very little scientific value because of the gaps of information and lack of follow-up data. Therefore, the OIG has published a report on the AEMS and made recommendations for the FDA to follow.

²⁰³ *See id.*

OIG Recommendations for the FDA

OIG determined that the entire framework of the AEMS requires modification and some legislative or regulatory alterations will be necessary in addition to more funding to execute the changes.²⁰⁴ The FDA has responded positively to the suggestions by listing many of them as their top priorities for the year and in their 10-year strategic plan for

dietary supplements.²⁰⁵ I have included the majority of the information from the report because of its relevance to the future of the FDA's treatment of ephedra. Moreover,

because the report was only released in April, it has not received extensive written treatment.

A.

Recommendation One: "Facilitate greater detection of adverse events."²⁰⁶

i.

Demand that manufacturers of supplements notify the FDA of any serious adverse effects for certain products.²⁰⁷ This recommendation will force the FDA to draw a bright line for products or ingredients that will be subject to this requirement.

ii. Establish a contract with the Poison Control Centers to have access to their adverse event reports on dietary supplements.²⁰⁸ These reports will provide useful safety data.

iii. Provide information to professionals in the healthcare industry and consumers about the AEMS for

²⁰⁴See *id.*

²⁰⁵See *id.*

²⁰⁸See *id.*

dietary supplements.²⁰⁹ One suggestion for implementation of this recommendation was to require manufacturers to include their own toll-free number or the toll-free number of the FDA, and to enlarge the program for informing doctors of current information on dietary supplements.²¹⁰

B.

Recommendation 2: “Obtain more information on adverse event reports in order to generate stronger signals of public health concerns.”²¹¹

i.

Promote educational programs for increased understanding within the health professional’s community on how essential the inclusion of medical information in adverse event reports is.²¹² This information will enable the FDA to more effectively draw conclusions about the safety of the supplement.

ii. Make it mandatory that dietary supplement manufacturers register their products with the FDA.²¹³ This would be one of the most useful, yet difficult recommendations to implement. This would address their inability to discern the manufacturers of products in question.

iii. Demand that dietary supplement manufacturers register with the FDA.²¹⁴

iv. Communicate serious adverse event reports to manufacturers upon receiving them at the FDA.²¹⁵ This would allow the manufacturers to address the problem as quickly as possible if it was deemed necessary after further testing.

v. Relay the significance of self-identification to health professionals and consumers.²¹⁶ This ensures that the FDA can gather any necessary follow-up information.

vi. Acquire a new computer system that will track and analyze adverse event reports.²¹⁷ This would give the FDA the ability to slice-and-dice the information within the database based upon the desired information.

C.

²⁰⁹ See *id.*

²¹⁰ See *id.*

²¹³ See *id.*

²¹⁴ See *id.*

²¹⁵ See *id.*

²¹⁶ See *id.*

²¹⁷ See *id.*

Recommendation 3: “Obtain vital information to adequately assess signals generated by the adverse event reporting system.”²¹⁸

i.

Provide more direction regarding the specific safety information desired by the manufacturers who currently are required to submit a 75-day pre-market notification for new dietary supplement ingredients.²¹⁹ This is already within the sphere of FDA control, and therefore, the FDA shouldn’t waste a low cost opportunity to gain more information.

ii. Look into the option of a monograph system for dietary supplements, which is a system that details that details efficacy and safety information on certain ingredients.²²⁰

iii. Work with the National Institutes of Health in order to agree upon and establish an agenda to target safety concerns.²²¹

iv. Help the industry and the United State Pharmacopoeia to implement standardization with supplement ingredients, namely botanicals.²²²

v. Facilitate the rapid development and execution of Good Manufacturing Practices for manufacturers of dietary supplements.²²³ This would necessary for implementation of the standardization of ingredients.²²⁴

D.

Recommendation 4: “Disclose more useful information to the public about dietary supplement adverse events.”²²⁵

i.

More useful and up-to-date information is needed on the FDA website.

ii. Summarize reported data in order to discern causation.

²²⁰ See *id.*

²²¹ See *id.*

²²² See *id.*

²²³ See *id.*

²²⁴ See *id.*

Response from the Trade Associations

The trade associations reviewed the report and offered three main criticisms: 1. the report does not attempt to address the internal operating procedures of the FDA's AEMS, 2. the report did not take DSHEA into consideration in the recommendations section, and 3. it did fail to factor the desire of the public to have control over/access to their "self-care" products.²²⁶ All these concerns have merit, yet it is clear that change needs to occur within the AEMS. It is now a matter of developing the most practical, cost-effective, and useful solution.

The Consumer Healthcare Products Association (CHPA) has led a consortium of dietary supplement trade groups to join forces in an effort to work together to petition the FDA to enforce a nationally standardized formulation, labeling, and marketing of ephedra.²²⁷ They have requested synthetic ingredients and unlawful claims to be vigilantly monitored and swiftly acted upon.²²⁸ They have stressed that action against companies engaging in fraudulent practices be taken because those companies have a detrimental effect on the compliant companies.²²⁹ CRN would also like to see more publicity regarding the new, more active enforcement the FDA plans to initiate in hopes of deterring companies from carrying out fraudulent plans.²³⁰ The companies currently participating in self-imposed standardization does not definitively qualify the product as safe.²³¹ Additional research is needed to determine safe and effective levels of ephedra. Until more studies are done, caution should still be exercised with this product, but standardization is a move in a positive direction.

²²⁶ See *id.*

²²⁷ Michael Maves, *Making Self-Care Work for the Consumer*, Chain Drug Review, (January 1, 2001).

²²⁸ *Complementary and Alternative Medicine: Industry Calls Upon FDA to Adopt National Standards on Ephedra*, Obesity, Fitness & Wellness Week, (November 11, 2000).

²²⁹ Patricia Van Amum, *Urging More Action in Implementing DSHEA*, Chemical Market Reporter, vol. 258, issue 13, (September 25, 2000).

²³⁰ See *id.*

²³¹ See *supra* Note 43.

Threat to Prescription & Non-Prescription Pharmaceutical Weight Loss Industry

Some are pointing the finger at the prescription and non-prescription pharmaceutical weight loss industry for wielding their power and influence to sway the FDA to regulate, as increased regulation will help ensure their profitability. Products containing ephedra are competing with their brands and affecting their market share. Recently, the dietary supplement industry pushed for legislation that would prevent states from banning ephedra and other herbal products.²³² This bill is titled the National Food Uniformity Act of 2000.²³³

States Respond by Regulating Ephedra

At least 17 states (Arizona, Arkansas, California, Florida, Hawaii, Idaho, Louisiana, Missouri, Nebraska, Nevada, New Mexico, Ohio, Oklahoma, Oregon, Tennessee, Texas, and Virginia) now have passed some form of legislation restricting the sale of ephedrine based products.²³⁴ Some states have been much tougher on ephedra than others. For example, Ohio has classified products containing ephedrine as schedule V controlled substances.²³⁵ Schedule V restrictions require that the supplement be dispensed by a pharmacist in amounts no greater than 100 in any 30 day period.²³⁶ Purchasers must be 18 years of age with valid identification, and they must give their address and signature.²³⁷ Florida has made ephedra available by

²³²See *supra* Note 7.

²³³See *id.*

²³⁴See *supra* Note 35.

²³⁵See *id.* at 109-110.

²³⁶See *id.* at 110.

²³⁷See *id.* at 110.

prescription only, and has limited the claims allowed on packaging.²³⁸

To Regulate or Not to Regulate

Do we want to restrict the freedom of millions just to protect the health of a few foolish zealots?²³⁹ Some would answer this question with a resounding yes. The FDA has been in a difficult position and is often accused of doing nothing or attempting to do too much.

Ephedra may be useful in reducing total obesity related medical costs. Even a 5-10 percent decrease in weight can lead to enormous medical benefits, such as improvements in blood pressure, lipids, and blood glucose, as well as a rise in self-esteem and a lowering of depression.²⁴⁰ The immediate key to avoiding the serious injuries is education. Many overweight consumers are so desperate to lose weight that they increase their intake of the ephedra. For example, one woman consumed over 28,000 mg of ephedra per day, which led to acute paranoid psychosis.²⁴¹ Consumers need to know and understand the risks they are taking with ephedra.

Ephedra is an herb that mimics the effects of drugs requiring a prescription, but it is regulated as a food. An attorney who handled an ephedrine case in Florida remarked that if an herb has the same physiological effect on the body as a synthetically produced version, it ought to be regulated (if it acts like a drug, it should be tested and regulated like a drug).²⁴² Perhaps strict regulation is not the answer and would run counter to the intent of Congress as memorialized in DSHEA. There may be other alternatives to regulation

²³⁸ See *id.* at 110.

²³⁹ See *supra* Note 13.

²⁴⁰ See *supra* Note 38.

²⁴¹ See *supra* Note 3.

²⁴² See *supra* Note 79.

or another form of regulation that would not hamper companies from producing safe and healthy products that consumers want access to.

At least for the moment, the industry and consumers alike can rest easy because of CFSAN's decision to focus on creating strategy to address the problems with the adverse event reports rather than propose regulations. Their goal in regards to the AEMS is to create a system that makes adverse event reports promptly available to manufacturers that includes the timely redaction of confidential information and allows for follow-up investigations and clinical assessments.²⁴³ The president of a Washington, D.C.-based trade association, Council for Responsible Nutrition, that represents a large portion of the ingredient suppliers and finished product manufacturers, stated that the FDA needed to hone their agenda.²⁴⁴ The US General Accounting Office offered the same criticism.²⁴⁵ In its present form, the plan is not actionable because it is too broad in scope and doesn't provide a detailed plan to facilitate change.²⁴⁶

As of April 2000, the FDA began to consider a new proposal to ban any products that combine ephedra and other stimulants.²⁴⁷ Given the current conflicting and paltry research available on the interaction effects of ephedra, it seems that any proposal limiting the combinations in question would be premature. At this point, it would appear more sensible to focus on finding a way to regulate the unsafe products produced by companies that are inadequately or falsely labeled, or have patently questionable amounts of ingredients.

Realistically, any drastic regulatory solutions will be met with such a powerful opposition from the industry and consumers that the proposals would stand slim chance if any of becoming final rules, as witnessed with the FDA's recent short-lived proposal to restrict the use of ephedra. Significant public outcry will

²⁴³See *supra* Note 70.

²⁴⁴See *supra* Note 229.

²⁴⁵See *id.*

²⁴⁶See *id.*

²⁴⁷See *supra* Note 194.

be necessary to amend DSHEA. According to a recent study completed by National Public Radio, the Kaiser Foundation, and the Kennedy School of Government, consumers are in fact now wanting stepped up governmental regulation for dietary supplements to ensure purity and safety, and to qualify the veracity of health claims made in advertisements and on labels.²⁴⁸ It may just be a matter of time before the pendulum swings back toward the direction of greater regulation, especially if that regulatory scheme will allow access to products without reducing the information consumers seek.

Until the backlash occurs, the FTC can play a more extensive role in the regulation of dietary supplements. While DSHEA left the FDA with substantially less authority to regulate the dietary supplement industry, the FTC has maintained its ability to challenge the health claims and deceptive advertising of manufacturers.²⁴⁹ Manufacturers must demonstrate a reasonable basis for the claims and/or advertising, which translates into competent and reliable scientific evidence from objective studies conducted by experts.²⁵⁰ However, the FTC cannot require a company to test the product to ensure it is safe at the recommended dose, nor can it force a company to include a warning about harmful side effects.²⁵¹ Nevertheless, the FTC has been somewhat successful in their regulation attempts (both in court and with administrative orders), but they could be more vigilant in their policing efforts, which would aid both the FDA and the American public.²⁵²

While stepped up efforts by the FTC will be helpful, the FTC alone can not rectify the situation. Dr. Mowrey testified before the House Government Reform Committee that he believes the answer may lie in a new regulatory category such as medicinal foods.²⁵³ Another suggestion was the creation of a category called traditional herbal therapies.²⁵⁴ This idea has merit because the FDA would not be forced to impose a

²⁴⁸Laura A. W. Khatcheressian, Regulation of Dietary Supplements: Five Years of DSHEA, Food and Drug L.J. 623-644, (1999).

²⁴⁹See *supra* Note 17.

²⁵⁰See *id.*

²⁵¹See *supra* Note 248.

²⁵²See *id.*

²⁵³See *supra* Note 13.

²⁵⁴See *supra* Note 161.

pre-existing and ill-fitting structure upon dietary supplements. It is possible that a new regulatory category could work in the future if it took into consideration the constraints of the dietary supplement industry regarding scientific proof and did not deny consumers access to products based on insufficient safety data. A new category should at least tackle the current problems with misleading labeling and should begin to address the task of collecting more scientific data on these dietary supplements in order to better ascertain the safety and proper dosages and interactions of the supplements. However, even this proposal would meet strong objections from the industry stemming from a fear of a reduction of control. For this reason, the immediate focus should be on affecting change that is possible within the immediate future.

FDA Action Plan

Despite the FDA's plans for change, trade associations and the GPO have criticized the lack of definite deadlines for execution. In defense of the FDA, without the allocation of funds for this project, it is not possible to implement all the changes and any deadlines would be knowingly unattainable. Funding from Congress must be increased if the FDA is to carry out its responsibilities effectively. Critics of the FDA such as Senator Orrin Hatch and Representative Bill Richardson, agree that greater consumer knowledge about preventative medicine should be encouraged, yet more funding is a prerequisite for this to occur.²⁵⁵

Guidelines

FDA guidelines are an alternative to regulation that is realizable without immense cost or long delays. The guidelines could be updated once comprehensive studies are performed, but until then, the available assembled data could be used. The updates to the guidelines could be implemented efficiently because they

²⁵⁵See *supra* Note 2.

do not have the force and effect of law and accordingly would not have to go through the same channels as regulations. This allows the FDA to abide by DSHEA and the intent of Congress, and does not require the substantial additional funding or delays that many other options would. The guideline could signify the position of the FDA and be used in court to establish the FDA's views regarding the issue at hand. The FDA policy on guidelines allows the FDA to establish principles or practices of general applicability that relate to performance characteristics, . . . product standards, . . . compliance criteria, . . . and ingredient specifications.²⁵⁶ According to FDA procedures, the Center director would possess the authority to change the guidelines.²⁵⁷

Good Manufacturing Processes

Another initiative the FDA can take that does not require funding that can assist in moving forward on improving the safety of dietary supplements involves good manufacturing processes (GMPs). More than five years ago, an assembly of industry groups drafted a standard for GMPs, but the FDA has yet to publish a final rule on this proposal.²⁵⁸ Approximately 90 percent of manufacturers use the warning label that was created for ephedra, but there are still enough companies in existence that do not that can cause harm to the public.²⁵⁹ This requirement alone will not sufficiently address the major issues with the regulation of dietary supplements, but because the solution will involve several minor and major changes, each effort will move the FDA and the industry closer to that goal.

Reallocating Responsibility

One way in which the FDA has already attempted to affect change without additional sources of funding from Congress is through redistributing task responsibility between two different centers under the FDA in order to increase efficiency and accuracy. This action has come under fire by trade associations.²⁶⁰ The

²⁵⁶ See *supra* Note 154.

²⁵⁷ See *id.*

²⁵⁸ See *supra* Note 229.

²⁵⁹ See *supra* Note 2.

²⁶⁰ See *supra* Note 229.

Center for Drug Evaluation and Research (CDER) will now be responsible for determining whether product labels purport to cure diseases.²⁶¹ This decision has troubled CRN and other trade associations because they fear that such a move brings dietary supplements closer to being regulated as a drug.²⁶² The trade associations argue that DSHEA made it clear that dietary supplements should be regulated as foods, and therefore should be under the control of CFSAN.²⁶³ But this argument does not take into consideration the lack of funding.²⁶⁴ The FDA needs additional funding to carry out the plans to change their current system. If the FDA can get another one of their centers to assist in the problem with clearly defined instructions that would comply with DSHEA, it seems that the associations' complaints are without merit. Ideally, the FDA would be able to establish a center or committee dedicated only to the dietary supplement industry.

Labeling

The change involving CDER follows in the wake of the *Pearson v. Shalala* decision in which the court held that particular health claims were protected by the First Amendment.²⁶⁵ The court of appeals disagreed with the FDA's argument that certain health claims are inherently misleading and can be disallowed on that basis.²⁶⁶ In fact, the court remarked that this contention is almost frivolous.²⁶⁷ Furthermore, the court held that the standard of significant scientific agreement was far too vague and needed to be clarified.²⁶⁸ More disturbing was the risk assessment the court performed. It did not consider the fact that risks are relative and serious adverse events have been documented.²⁶⁹ There is risk with many drugs, but at least

²⁶¹ See *id.*

²⁶² See *id.*

²⁶³ See *id.*

²⁶⁴ See *supra* Note 70.

²⁶⁵ See *supra* Note 229.

²⁶⁶ David C. Vladeck, *Devaluing Truth: Unverified Health Claims in the Aftermath of Pearson v. Shalala*, 54 Food Drug L.J. 535-553, (1999).

²⁶⁷ See *id.* at 543.

²⁶⁸ See *supra* Note 17.

²⁶⁹ See *id.* at 548.

there is quantifiable benefit.²⁷⁰ With dietary supplements, the risks and benefits are not well understood.²⁷¹ Unlike the district court, the court of appeals framed the issue primarily around First Amendment rights rather than on the governmental interest of protecting the health and safety of the public.²⁷² However, the court of appeals did not seem to take into consideration that the Supreme Court has asserted that the First Amendment does not prevent the government from ensuring that the stream of commercial information flows cleanly as well as freely.²⁷³ The court of appeals did not agree that disclaimers and warnings are insufficient to solve the problem of consumer deception.²⁷⁴ This case demonstrates the complex issues and difficulties dietary supplements pose in terms of regulation.

The industry is anxiously waiting to see how the decision will be implemented.²⁷⁵ Labeling is a thorn in the side both the FDA and the industry. Many fear that the FDA will create two different types of claims under the Nutrition Labeling and Education Act (NLEA).²⁷⁶ One type would be approved as truthful and not misleading without the need for disclaimers, while the other would be approved only with disclaimers.²⁷⁷ Naturally the trade wants to ensure as much control and freedom over labeling as possible. Another possible result of this decision is that drug manufacturers may attempt to spare the costly expense of clearing the hurdles drugs must meet, and instead use herbal forms of the substance when possible in order to get the product to market faster and with fewer restrictions.²⁷⁸ In the meantime, until comprehensive studies are completed, requiring an additional statement that is prominently placed in bold on the package that states **DO NOT MIX THIS SUPPLEMENT WITH ANY PRESCRIPTION MEDICATION WITHOUT THE ADVICE OF YOUR PHYSICIAN, AT THE RISK OF SERIOUS INJURY** would possibly be an effective

²⁷⁰ See *id.* at 548.

²⁷¹ See *id.* at 548.

²⁷² See *id.* at 541.

²⁷³ See *id.* at 541.

²⁷⁴ See *id.* at 541.

²⁷⁵ See *supra* 229.

²⁷⁶ See *id.*

²⁷⁷ See *id.*

²⁷⁸ See *supra* Note 266.

method to prevent unnecessary adverse events.²⁷⁹ This statement on packaging brings the FDA closer to achieving its goal of increased public awareness.

Education and Awareness

Educating the public by disseminating information on ephedra should be one of the first tactics to try to combat this extremely misunderstood herb. This will serve to correct the problematic and faulty equation most people subscribe to so that eventually the general public will come to realize that natural does not equal safe. Such an approach should also notify consumers to be savvy in their dietary supplement purchases. Consumers must be instructed to be more aware that labels need to be read because in many instances, they have no idea they are taking the herb.²⁸⁰

Efforts have been made on the part of the FDA and the FTC to inform the public, but the messages are not reaching a broad enough audience. The FDA has a newsletter that uncovers many top health frauds, while the FTC also has publications to inform the public on how to identify fraudulent claims.²⁸¹ The FTC has advised the public to be cautious to avoid falling into the trap of thinking natural equals safe, but what percentage of the public received this message? Clearly, the message needs to be more effectively broadcast. Both the FDA and the FTC have websites brimming with useful information that the public has access to. The problem seems to be a lack of consumer awareness about the sites and materials published. Many consumers either lack the resourcefulness necessary to find the information, or the time to seek it out. Therefore, the information is not achieving the maximum potential impact it otherwise could have. The message must be delivered to the public in such a way that it is likely to be received.

²⁷⁹Leticia M. Diaz, *First St. John's Wort, Now SAM-E: Is Society as a Whole at Risk without FDA Regulation of Psychiatric Self-Medication?* Kan. J.L. & Pub. Pol'y 279-291, vol. 9 (Winter 1999).

²⁸⁰*New Doubts about Ephedra*, Chain Drug Review, vol. 22, issue 21, (December 11, 2000).

²⁸¹Leticia M. Diaz, *Cellasene or Endermologie, The Administrative Battle Against Cellulite: Does FDA Approval Impress Consumers?*, QLR (Fall 2000).

An unusual possibility, television advertisements, requires more funding, but it would be money well spent because it would bring the FDA and FTC closer to their goals of protecting the public through education and at a minimum, awareness. Placing announcements on the big screen before the trailers begin in a theater would be another opportunity to feature information in a manner that will reach the intended audience. There is an overwhelming amount of contradictory evidence available making it impossible for most consumers to come to a conclusion in which they feel certain. But, most consumers never bother to investigate due to time constraints or a lack of knowledge as to where to begin their search. Instead, most purchasers of dietary supplements get their information from friends, labels, or sales people.²⁸² Perhaps using mainstream media is unconventional, but the traditional approaches are not effective. Thinking out of the box will push change further and faster than contained thinking. It may require more effort and creative problem solving skills than prior methods, but improvement in awareness is well worth taking some risks.

Getting the information out is necessary to counteract the role models such as Mark McGwire who has accredited part of his achievement to ephedra products.²⁸³ Even coaches and parents have encouraged their athletes to ingest these wonder pills for a better performance and physique.²⁸⁴ For this target category, another appropriate forum for dietary supplement education is the public schools.

In conjunction with the distribution of information, the medical community needs to be better educated in the field of herbal medicine. Even though many schools are adding courses in alternative medicine to the classes they offer, and doctors may attend them, they are not required to. A program similar to the CLE course mandatory for lawyers would remedy this gap created by the exploding consumer use of herbal medicines.

²⁸² See *supra* Note 248.

²⁸³ See *supra* Note 17.

²⁸⁴ See *id.*

Formation of Alliances

It may be wise to form alliances with other organization to deliver the messages to the public. Groups such as Halt Ephedrine Abuse Today (H.E.A.T.) would be a natural choice regarding this specific dietary supplement. This non-profit organization was born after the death of the founding mother's 24 year-old son who died from ephedrine toxicity.²⁸⁵ Their stated mission is: to increase public awareness about the dangers of ephedra and to promote the prevention of abuse of ephedrine.²⁸⁶ Other groups such as the American Heart Association, the Herb Research Foundation, the Alliance for Alternatives in Healthcare, the American Herbal Products Association, and the Alternative Medical Association are but a few additional examples of groups that should be contacted to join in this informational alliance. They all have in interest in making sure that the public does not misuse products that can lead to serious side effects. Moreover, they also have an interest in making sure that the public is made aware of any scientific substantiation of natural products. This idea of alliance creation has begun, but needs to continue. On May 14, 2001, the National Center for Complementary and Alternative Medicine (NCCAM) at the NIH arranged a colloquium to explore opportunities to collaborate with two key groups (industrial stakeholders who produce and label dietary supplements, and organizations that develop and apply standards to determine the quality and safety of these products) as well as many other groups (federal regulators, consumers, practitioners of all types, researchers, publishers, etc.).²⁸⁷ This effort demonstrates the perceived value and necessity of such alliances.

The alliances have the potential to be instrumental in redesigning the adverse event monitoring system. For this reason, before making changes to the system, the FDA should assemble representation from the industry in order to create the most effective system. Secondly, funding for the computer systems and personnel to analyze the data must be considered.²⁸⁸ These systems are crucial to the understanding and documentation

²⁸⁵Barbara Michal, www.ephedrainjury.com

²⁸⁶*See id.*

²⁸⁷*See supra* www.dietary-supplements.info.nih.gov

²⁸⁸*See supra* Note 229.

of the side effects of dietary supplements. If the systems and processes are inadequate then the data collected has little to no scientific value.

Mandatory Contribution from the Industry

A more controversial solution that is sure to be met with fierce opposition from dietary supplement manufacturers is a requirement that would make the industry responsible for funding the necessary scientific studies that are at the epicenter of the controversy over the safety and efficacy of these dietary supplements. Each company could be required to donate a percentage of their profits for the studies, provided they produce a product with the targeted ingredient. DSHEA lifted their burden of proof and opened the door to a thriving fraudulent sector of the industry. Using the German Commission E, the Physician's Desk Reference for Herbal Medicines, the National Center for Complementary and Alternative Medicine, and the database begun by the Office of Dietary Supplements at NIH is a decent beginning point for these studies in the effort to create more accurate and thorough monographs.²⁸⁹ These monographs can lend credibility to the use of dietary supplements, which have the added effect of making patients more comfortable with informing their physicians of their use of dietary supplements.

This financial burden would not restrict the current sales, marketing or production in place, but would ensure more accurate information is ascertained as to the appropriate dosages, dangerous interactions, and benefits of the supplement. If in fact a supplement is found to be dangerous or toxic to the user in its present form, then the FDA could act on this information. If the supplements are as safe and effective as they claim to be, the industry should have no contention over such a plan—except for the gouge it will make in their profitability and a concern for the methodology of the testing. Alternatively, if the FDA could not gain the support necessary to require this measure, they should request additional funds to be able to lessen the

²⁸⁹See *supra* Note 161.

financial burden on companies.

Rating System

A rating system could be implemented to tackle the problem of scientific agreement or substantiation.²⁹⁰ The scale could rate herbs on a 1-5 basis for effectiveness.²⁹¹ For example, if only anecdotal exists, the product would receive a rating of 1, whereas a 5 could inform the consumer that there is significant scientific agreement and the product is indeed effective.²⁹² The ratings would need to be changed as new information came available.²⁹³ The companies could present any independent research in order to change the monograph and hence the rating, but it would have to be confirmed first.²⁹⁴ Even with a rating system, until conclusive studies and scientific agreement is reached, labeling in addition to the ratings would be beneficial.

Heightened Surveillance

Random testing of products for contamination and monitoring of label claims is yet another option for increasing the safety of the consumers of dietary supplements, and it is within the FDA's scope of authority.²⁹⁵ The FDA has acknowledged that their current surveillance efforts could be improved.²⁹⁶ This would hopefully deter the knowingly fraudulent manufactures from using impurities in their products. The downside of this suggestion is that it will require additional funding in order to be carried out effectively.

Conclusion

²⁹⁰ See *id.*

²⁹¹ See *id.*

²⁹² See *id.*

²⁹³ See *id.*

²⁹⁴ See *id.*

²⁹⁵ Lauren J. Sloane, *Herbal Garden of Good and Evil: The Ongoing Struggles of Dietary Supplement Regulation*, Administrative Law Review, (Winter, 1999).

²⁹⁶ See *id.*

The adverse events experienced after ingesting ephedra and other dietary supplements have demonstrated the need for FDA intervention. The FDA has an important role to play in safeguarding the health and safety of the American public. The FDA has been criticized as contravening the Congressional intent underlying DSHEA because of its attempts to regulate the dietary supplement industry, when in fact, the FDA has not overstepped its bounds. The agency has only taken the measures it felt necessary to protect the public and implement a complex and ambiguous law.²⁹⁷ However, the FDA does need to focus on more effective procedures and systems for collecting adverse event reports and could take additional steps toward public awareness. In order for the FDA to address the overall problems with the regulating the dietary supplement industry efficiently and effectively, they will need additional funding.

²⁹⁷Hearings Before the House Government Reform Committee, Congressman Henry A. Waxman, 106th Congress (1999).